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# COAST GUARD

## As Deepwater Systems Integrator, Coast Guard Is Reassessing Costs and Capabilities but Lags in Applying Its Disciplined Acquisition Approach



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Highlights of [GAO-09-682](#), a report to congressional committees

## Why GAO Did This Study

The Deepwater Program includes efforts to build or modernize ships and aircraft and to procure other capabilities. In 2002, the Coast Guard contracted with Integrated Coast Guard Systems (ICGS) to manage the acquisition as systems integrator. After a series of project failures, the Coast Guard announced in April 2007 that it would take over the lead role, with future work on individual assets bid competitively, and a program baseline of \$24.2 billion was set. In June 2008, GAO reported on the Coast Guard's progress and made several recommendations, which the Coast Guard and the Department of Homeland Security (DHS) have addressed. In response to a Senate report accompanying the DHS Appropriations Bill, 2009, GAO addressed (1) efforts to manage Deepwater, (2) changes in cost and schedule of the assets, and (3) efforts to build an acquisition workforce. GAO reviewed Coast Guard and DHS documents and interviewed officials.

## What GAO Recommends

GAO recommends that the Coast Guard bring certain assets into compliance with its acquisition processes before exercising additional contract options, consult with DHS regarding an apparent inconsistency between their acquisition policies, and better present asset costs to Congress in its budget submissions. In written comments, the Coast Guard agreed with the first two items; DHS stated that it will take the third under advisement.

View [GAO-09-682](#) or key components. For more information, contact John Hutton at (202) 512-4841 or [huttonj@gao.gov](mailto:huttonj@gao.gov).

## COAST GUARD

### As Deepwater Systems Integrator, Coast Guard Is Reassessing Costs and Capabilities but Lags in Applying Its Disciplined Acquisition Approach

## What GAO Found

The Coast Guard has assumed the role of systems integrator for the overall Deepwater Program by reducing the scope of the work on contract with ICGS and assigning these functions to Coast Guard stakeholders. As part of its systems integration responsibilities, the Coast Guard has undertaken a fundamental reassessment of the capabilities, number, and mix of assets it needs and expects to complete this analysis by the summer of 2009. At the individual Deepwater asset level, the Coast Guard has improved and begun to apply the disciplined management process contained in its *Major Systems Acquisition Manual (MSAM)*, but did not meet its goal of complete adherence to this process for all Deepwater assets by the end of March 2009. For example, key acquisition management activities—such as operational requirements documents and test plans—are not in place for assets with contracts or orders recently awarded (such as the Fast Response Cutter and C4ISR) or in production, placing the Coast Guard at risk of cost growth or schedule slips. In addition, the *MSAM* does not appear to be consistent with recent DHS policy that requires entities responsible for operational testing to be independent of the system's users.

Due in part to the Coast Guard's increased insight into what it is buying, the anticipated cost, schedules, and capabilities of many Deepwater assets have changed since the \$24.2 billion baseline was established in 2007. Coast Guard officials have stated that this baseline reflected not a traditional cost estimate, but rather the anticipated contract costs as determined by ICGS. As the Coast Guard has developed its own cost baselines for some assets, it has become apparent that some of these assets it is procuring will likely cost more than anticipated—up to \$2.7 billion more based on information to date. This represents approximately 39 percent cost growth for the assets with revised cost estimates. As more cost baselines are developed and approved, further cost growth is likely. Updated baselines also indicate that schedules have slipped for several of the assets. In addition, the current structure of the Coast Guard's budget submission to Congress does not include details at the asset level, such as estimates of total costs and total numbers to be procured, as do those of the Department of Defense, which acquires similar systems.

One reason the Coast Guard hired a contractor as a systems integrator was because it recognized that it lacked the experience and depth in workforce to manage the acquisition internally. The Coast Guard acknowledges that it still faces challenges in hiring and retaining qualified acquisition personnel and that this situation poses a risk to the successful execution of its acquisition programs. According to human capital officials in the acquisition directorate, as of April 2009, the acquisition branch had 16 percent of positions unfilled, including key jobs such as contracting officers and systems engineers. Even as it attempts to fill its current vacancies, the Coast Guard plans to increase the size of its acquisition workforce significantly; the fiscal year 2010 budget request includes funding for 100 new acquisition workforce positions. In the meantime, the Coast Guard has been increasing its use of support contractors.

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United States Government Accountability Office  
Washington, DC 20548

July 14, 2009

The Honorable Robert C. Byrd  
Chair  
The Honorable George Voinovich  
Ranking Member  
Subcommittee on Homeland Security  
Committee on Appropriations  
United States Senate

The Honorable David E. Price  
Chair  
The Honorable Harold Rogers  
Ranking Member  
Subcommittee on Homeland Security  
Committee on Appropriations  
House of Representatives

The Deepwater Program—the largest acquisition program in the Coast Guard’s history—began in the late 1990s as an effort to recapitalize the Coast Guard’s operational fleet. The program now includes projects to build or modernize five classes each of ships and aircraft, and procurement of other capabilities such as improved command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) and unmanned aircraft. Recognizing that it did not have in place a workforce with the experience and depth to manage the acquisition, the Coast Guard contracted with Integrated Coast Guard Systems (ICGS) in June 2002 as a systems integrator for Deepwater.<sup>1</sup> After a series of programmatic failures, the Commandant acknowledged in April 2007 that the Coast Guard had relied too heavily on contractors to do the work of the government and that government and industry had failed to control costs. He announced several major changes to the acquisition approach for Deepwater, the key one being that the Coast Guard would take over the role of systems integrator from ICGS, with future work on individual assets to be potentially bid competitively outside of the existing contract. In May 2007, soon after this announcement, the Department of

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<sup>1</sup> ICGS is a business entity jointly owned by Northrop Grumman and Lockheed Martin. These companies are first-tier subcontractors to ICGS and under the ICGS contract provide Deepwater assets or award second-tier subcontracts.

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Homeland Security (DHS) approved an acquisition program baseline of \$24.2 billion for the Deepwater Program.<sup>2</sup>

In response to a direction in the Senate report accompanying the Department of Homeland Security Appropriations Bill, 2009, and discussions with your staff, we (1) evaluated Coast Guard efforts to manage the Deepwater Program at both the overall system and asset levels; (2) assessed changes in cost, schedules, and capabilities from the 2007 baseline; and (3) identified Coast Guard efforts to build its acquisition workforce to manage this multibillion dollar program. This report updates information contained in our April 2009 testimony to the Homeland Security Subcommittee of the House Appropriations Committee.<sup>3</sup>

To conduct our work, we reviewed key Coast Guard documentation such as the *Major Systems Acquisition Manual (MSAM)*, *Blueprint for Acquisition Reform*, original and recently approved acquisition program baselines, and human capital plans. We interviewed Coast Guard acquisition directorate officials, including program managers and contracting officers, and officials from other Coast Guard directorates such as those responsible for human capital issues and for assessing and developing operational requirements for Deepwater assets. We also interviewed officials from ICGS and its first-tier subcontractors Lockheed Martin and Northrop Grumman Shipbuilding. In addition, we relied in part on our past work on the Deepwater Program. Appendix I contains more information regarding our scope and methodology. We conducted this performance audit between September 2008 and July 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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<sup>2</sup> The Deepwater Program originally had an estimated cost of \$17 billion. The May 2007 baseline of \$24.2 billion reflects changes to the program to reflect the Coast Guard's post-September 11, 2001, missions.

<sup>3</sup> GAO, *Coast Guard: Update on Deepwater Program Management, Cost, and Acquisition Workforce*, [GAO-09-620T](#) (Washington, D.C.: Apr. 22, 2009).

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## Background

The Coast Guard is a multimission, maritime military service within DHS. The Coast Guard's responsibilities fall into two general categories—those related to homeland security missions, such as port security and vessel escorts, and those related to the Coast Guard's traditional missions, such as search and rescue and polar ice operations. To carry out these responsibilities, the Coast Guard operates a number of vessels and aircraft and, through its Deepwater Program, is currently modernizing or replacing a number of those assets. Since 2001, we have reviewed the Deepwater Program and have informed Congress, DHS, and the Coast Guard of the risks and uncertainties inherent in the acquisition. In June 2008, we reported on our assessment of the preliminary steps the Coast Guard had taken to revise its acquisition approach. For example, we found that the Coast Guard had increased accountability by bringing Deepwater under a restructured acquisition function and investing its government project managers with management and oversight responsibilities formerly held by ICGS. In addition, the Coast Guard had begun to manage Deepwater under an asset-based approach, resulting in increased government control and visibility over acquisitions. We concluded that while these steps were beneficial, continued oversight and improvement were necessary to further mitigate risks and made several recommendations, which the Coast Guard and DHS have taken actions to address.<sup>4</sup>

At the start of the Deepwater Program in the late 1990s, the Coast Guard chose to use a system-of-systems acquisition strategy. A system-of-systems is defined as the set or arrangement of assets that results when independent assets are integrated into a larger system that delivers unique capabilities. As the systems integrator, ICGS was responsible for designing, constructing, deploying, supporting, and integrating the Deepwater assets into a system-of-systems. Under this approach, the Coast Guard provided the contractor with broad, overall performance specifications—such as the ability to interdict illegal immigrants—and ICGS determined the assets needed and their specifications. According to Coast Guard officials, the ICGS proposal was submitted and priced as a package; that is, the Coast Guard bought the entire solution and could not reject any individual component. In November 2006, the Coast Guard submitted a cost, schedule, and performance baseline to DHS that established the total acquisition cost of the ICGS solution at \$24.2 billion and projected that the acquisition would be completed in 2027. In May

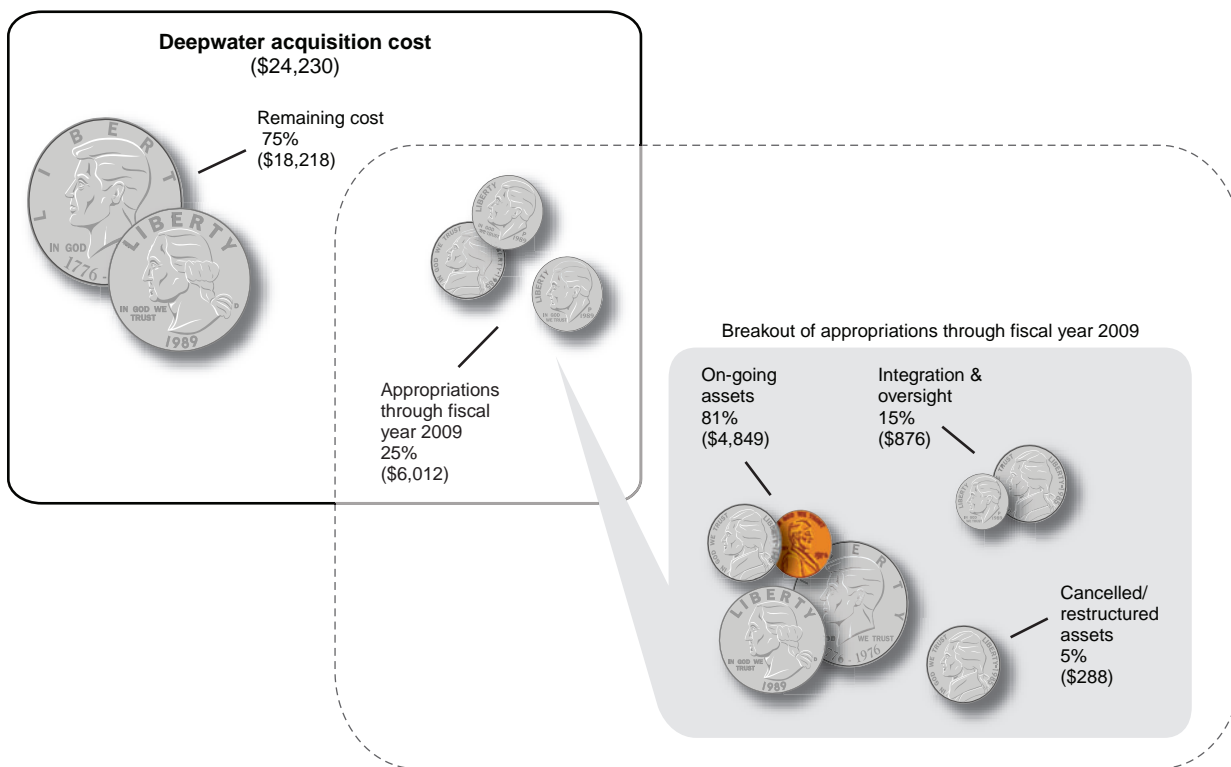
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<sup>4</sup> GAO, *Coast Guard: Change in Course Improves Deepwater Management and Oversight, but Outcome Still Uncertain*, [GAO-08-745](#) (Washington, D.C.: June 24, 2008).

2007, shortly after the Coast Guard had announced its intention to take over the role of systems integrator, DHS approved the baseline.

From fiscal year 2002 to fiscal year 2009, over \$6 billion has been appropriated for the Deepwater Program, about 25 percent of the total anticipated costs of \$24.2 billion. Figure 1 depicts a breakdown of how these appropriations have been allocated as of fiscal year 2009, including for integration and oversight functions; ongoing Deepwater assets; and assets that the Coast Guard has cancelled or restructured.

**Figure 1: Percent of Total Deepwater Costs Appropriated through Fiscal Year 2009 and Breakout of Those Appropriations [Then-year dollars in millions]**



Source: GAO analysis of Coast Guard data.

Note: Percentages may not add due to rounding.

Regarding the breakout of appropriations through fiscal year 2009, the \$876 million appropriated for integration and oversight has been allocated for activities such as planning for Deepwater logistics, obsolescence prevention, government program management, and systems engineering and integration. Of the \$288 million allocated for cancelled or restructured

assets, the Coast Guard allocated about \$134 million to ICGS for two projects that were subsequently cancelled: an estimated \$95 million to extend the Coast Guard's 110-foot patrol boats by an additional 13 feet (known as the 123-foot patrol boat conversions) and approximately \$39 million for the initial design of the Fast Response Cutter (known as FRC-A). The Coast Guard terminated the design efforts for the FRC-A in February 2008. In addition, three projects received significant funding before being restructured or redesigned. The Coast Guard allocated approximately \$119 million to ICGS for the Vertical Unmanned Aerial Vehicle before stopping work on the design in 2007 due to developmental and cost concerns. Over \$27 million was allocated for the Offshore Patrol Cutter (OPC) before design work was stopped in 2006, and over \$8 million was allocated for cutter small boats before a decision was made in 2008 to take a different acquisition approach for those assets. The Coast Guard is now considering alternative designs for all three of these assets.

Table 1 describes in more detail the assets the Coast Guard is planning to procure or upgrade under the Deepwater Program according to approved acquisition baselines.

**Table 1: Information on Deepwater Assets**

Asset	Quantity	Description
National Security Cutter (NSC)	8 ships	The NSC is intended to be the flagship of the Coast Guard's fleet, with an extended on-scene presence, long transits, and forward deployment. The cutter and its aircraft and boat assets are to operate worldwide.
Offshore Patrol Cutter (OPC)	25 ships	The OPC is intended to conduct patrols for homeland security functions, law enforcement, and search and rescue operations. It will be designed for long-distance transit, extended on-scene presence, and operations with multiple aircraft and boats.
Fast Response Cutter (FRC)	58 ships	The FRC is conceived as a patrol boat with high readiness, speed, adaptability, and endurance to perform a wide range of missions. After terminating FRC-A design efforts, the Coast Guard pursued acquisition of a modified commercially available patrol boat.
Medium Endurance Cutter Sustainment	27 ships	The cutter sustainment project is intended to improve the cutters' operating and cost performance by replacing obsolete, unsupportable, or maintenance-intensive equipment.
Patrol Boat Sustainment (110' patrol boats)	20 boats	The patrol boat sustainment project is intended to improve the boats' operating and cost performance by replacing obsolete, unsupportable, or maintenance-intensive equipment.
Cutter Small Boats	124 boats	Cutter small boats are an integral component of the planned capabilities for the larger cutters and patrol boats and are critical to achieving success in all operational missions. The Coast Guard is currently restructuring its cutter small boat programs.
Maritime Patrol Aircraft (MPA)	36 aircraft	The MPA is intended to be a transport and surveillance, fixed-wing aircraft used to perform search and rescue missions, enforce laws and treaties, and transport cargo and personnel.

Asset	Quantity	Description
HC-130J Long-Range Surveillance Aircraft	6 aircraft	The HC-130J is a four-engine turbo-prop aircraft which the Coast Guard intends to deploy with improved interoperability, C4ISR, and sensors to enhance surveillance, detection, classification, identification, and prosecution.
HC-130H Long-Range Surveillance Aircraft	16 aircraft	The HC-130H is the legacy Coast Guard long-range surveillance aircraft which the Coast Guard intends to update with structural sustainability, improved interoperability, C4ISR, and sensors to enhance surveillance, detection, classification, identification, and prosecution.
HH-65 Multimission Cutter Helicopter	102 aircraft	The HH-65 Dolphin is the Coast Guard's short-range recovery helicopter. It is being upgraded in phases to improve its engines, communications equipment, avionics, and other capabilities.
HH-60 Medium Range Recovery Helicopter	42 aircraft	The HH-60J is a medium-range recovery helicopter designed to perform search and rescue missions offshore in all weather conditions. The Coast Guard intends to upgrade the helicopter's avionics, C4ISR, and other systems.
Unmanned Aerial System	To be determined	The Coast Guard has deferred acquisition of this asset because of challenges in technology maturation of the ICGS proposed design. The Coast Guard continues its analysis of needs and alternatives, with an acquisition plan for this asset in development.
Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR)	n.a.	The Coast Guard is incrementally acquiring C4ISR capabilities including upgrades to existing cutters and shore installations, acquisitions of new assets, and development of a common operating picture to provide operationally relevant information and knowledge across the full range of Coast Guard operations.

Source: GAO analysis of Coast Guard data.

## Coast Guard Has Assumed the Role of Systems Integrator but Lags in Applying Disciplined Asset-Level Processes as It Continues with Procurements

The Coast Guard has assumed the role of systems integrator for Deepwater, concurrently downsizing the scope of systems engineering and integration work under contract with ICGS. In conjunction with its role as systems integrator, the Coast Guard has undertaken a fundamental reassessment of the capabilities and mix of assets it needs to meet its Deepwater missions. In addition, DHS and the Coast Guard have made improvements in oversight and management of Deepwater; for example, the Coast Guard has made progress in applying the *MSAM* acquisition process to individual Deepwater assets and made improvements to the process as a whole. However, the Coast Guard did not meet its goal of having all assets fully compliant with the *MSAM* by the end of March 2009. Hence, acquisition decisions for certain assets are being made without having completed some key acquisition documentation in light of what the Coast Guard views as pressing operational needs.

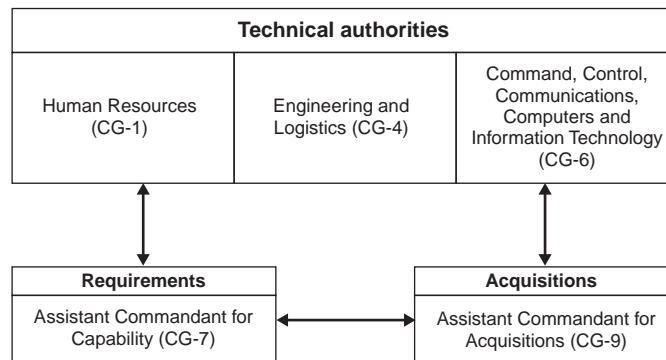
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## Coast Guard Has Assumed Key Systems Integrator Roles and Responsibilities from ICGS and Reduced Contractor's Scope of Work

The role of systems integrator involves determining the mix of assets needed to fulfill mission needs, as well as designing, procuring, and integrating those assets into a system-of-systems capability greater than the sum of the individual parts. ICGS's role as systems integrator for the Deepwater Program included managing requirements, determining how assets would be acquired, defining how assets would be employed by Coast Guard users in an operational setting, and exercising technical authority over all asset design and configuration. In 2008, the Coast Guard acknowledged that in order to assume the role of systems integrator, it needed to define systems integrator functions and assign them to Coast Guard stakeholders. As a result, the Coast Guard has established new relationships among its directorates to assume control of key systems integrator roles previously carried out by the contractor. Through a series of policy changes and memoranda, the Coast Guard formally designated certain directorates as technical authorities responsible for establishing, monitoring, and approving technical standards for Deepwater assets related to design, construction, maintenance, logistics, C4ISR, and life-cycle staffing and training. Furthermore, the Coast Guard's capabilities directorate is now responsible for determining operational requirements and the asset mix to satisfy those requirements. This directorate is expected to collaborate with the technical authorities to ensure that the Coast Guard's technical standards are incorporated during the requirements development process. Finally, the acquisition directorate's program and project managers are responsible for procuring the assets and are to be held accountable for ensuring that they fulfill the operational requirements and the technical authority standards established by the other directorates.

The collaborative relationships among the Coast Guard directorates discussed above are depicted in figure 2.

**Figure 2: Directorate Relationships**



Source: GAO analysis of Coast Guard data.

When it contracted with ICGS in 2002, the Coast Guard lacked insight into how the contractor’s proposed solution for Deepwater would meet overall mission needs. This situation limited the Coast Guard’s ability to make informed decisions about possible trade-offs between cost and capability. As a way of improving its insight, the capabilities directorate has initiated a fundamental reassessment of the capabilities and mix of assets the Coast Guard needs to fulfill its Deepwater missions. The goals of this fleet mix analysis include validating mission performance requirements and revisiting the number and mix of all assets that are part of the Deepwater Program. A specific part of the study will also analyze alternatives and quantities for the OPC, which currently accounts for a projected \$8 billion—about 33 percent—of total Deepwater costs. Coast Guard leadership intends to base future procurement decisions on the results of this analysis, which is expected to be completed in the summer of 2009. According to a senior official in the capabilities directorate, the directorate has recommended that this type of analysis be repeated every 4 years, or once during each commandant’s tenure.

In conjunction with assuming the role of systems integrator, the Coast Guard has reduced the scope and volume of ICGS’s systems engineering and integration functions. For example, the most recent systems engineering and integration task order, issued to ICGS in March 2009, is limited to support services such as data management and quality assurance for the assets currently on contract with ICGS, such as the Maritime Patrol Aircraft (MPA), the National Security Cutter (NSC), and C4ISR. By contrast, under the prior systems engineering and integration task order, ICGS was responsible for systems integrator functions such as

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developing the mix of assets to meet Coast Guard missions, the development of operational concepts, requirements management, test and evaluation management, and a number of other program management and system-of-systems level functions.

While the Coast Guard does not intend to cancel ongoing orders with ICGS for services or assets, it does not plan to acquire future assets from ICGS. A step in this direction was the September 2008 competitive award of the Fast Response Cutter to Bollinger Shipyards, Inc.<sup>5</sup> Further, while ICGS will continue to be responsible for the construction and delivery of the first three NSCs, the Coast Guard intends to award contracts for construction and long-lead-time materials for future NSCs directly to ICGS subcontractor Northrop Grumman Shipbuilding. The Coast Guard's decision was formalized in a March 2009 contract modification with ICGS stating that it will not award future work to ICGS after the current award term ends in January 2011.<sup>6</sup>

Table 2 shows that, as of May 2009, the Coast Guard has about \$2.3 billion under contract with ICGS in ongoing work. The table does not include the total potential value of options and modifications that could be exercised before the current award term expires.

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<sup>5</sup> This contract was for the design, construction, and delivery of a modified commercially available patrol boat.

<sup>6</sup> In June 2002, the Coast Guard awarded the Deepwater contract to ICGS. The award was an indefinite delivery, indefinite quantity contract with a 5-year base period and five potential extensions of the contract (award terms) of up to 5 years each. Based on the Coast Guard's assessment of its performance, ICGS earned one award term of 43 months. The contract's scope of work included not only the procurement of individual assets but also significant systems engineering, integration, and logistics functions.

**Table 2: Ongoing Work with ICGS (Then-year dollars in millions)**

Items under contract	Obligations as of May 2009
<b>National Security Cutter</b>	<b>1,354.8</b>
National Security Cutter 1 (Production and long lead materials)	511.0
National Security Cutter 2 (Production)	331.6
National Security Cutter 3 (Long lead materials)	75.5
National Security Cutter 3 (Production)	337.5
National Security Cutter 4 (Long lead materials)	99.2
<b>HC-130J Long-Range Surveillance Aircraft</b>	<b>141.7</b>
<b>Maritime Patrol Aircraft</b>	<b>508.2</b>
Aircraft 1 to 3 and Mission Equipment for 1 to 3	171.4
Aircraft 4 to 8	171.8
Aircraft 9 to 11 and Mission Equipment for 4 to 12	165.0
<b>C4ISR</b>	<b>285.1</b>
Increment 1 (Concept and Preliminary Design)	73.8
Increment 1 (Detail Design and Development)	141.3
Increment 2 (Concept and Preliminary Design)	16.2
Increment 2 (Detail Design and Development)	32.5
Test Center	5.3
Software Engineering	16.0
<b>Systems Engineering and Integration</b>	<b>56.9</b>
<b>Total</b>	<b>\$2,346.7</b>

Source: GAO analysis of Coast Guard data.

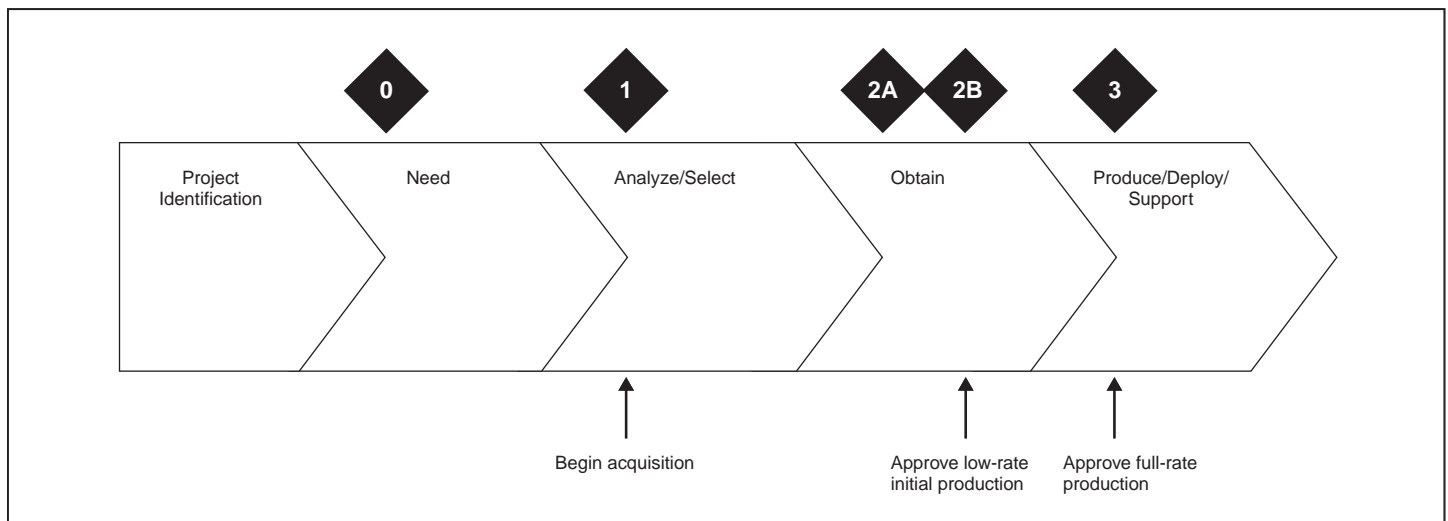
**Coast Guard and DHS Have Improved Oversight of the Deepwater Program but Gaps in Knowledge Remain Even as Production and Award of New Contracts Proceed**

Since our June 2008 report on the Deepwater Program, and taking into account our recommendations, the Coast Guard and DHS have taken steps to improve management and oversight of Deepwater.<sup>7</sup> We reported, for example, that the Coast Guard had transitioned from a system-of-systems acquisition approach to an asset-based approach that reflects the disciplined and formalized process outlined in its *MSAM*. While the introduction of this process was a significant improvement, we found that the absence of a key milestone decision point before low-rate initial production begins was problematic and put program outcomes at risk. In response to our recommendation, the Coast Guard revised its *MSAM* to require a formal design review, termed “acquisition decision event 2B,” to

<sup>7</sup>[GAO-08-745](#).

ensure that risks are appropriately addressed before low-rate initial production is authorized. The *MSAM* phases and acquisition decision events are shown in figure 3.

**Figure 3: Major Systems Acquisition Manual (MSAM) Phases and Acquisition Decision Events**



Source: Coast Guard's major systems acquisition manual.  
Note: Black diamonds denote acquisition decision events.

The Coast Guard has made other improvements to its *MSAM* process. For example, the *MSAM* now includes standardized cost-estimating procedures to provide an accounting of all resources required to develop, produce, deploy, and sustain a program. Before, there was minimal guidance in the manual about the cost-estimating process; it now includes a full description of the process and a cost-estimating template for project managers. The *MSAM* process was also revised to require acquisition planning and an early affordability assessment prior to acquisition decision event 1 (the “analyze/select” phase), to help inform the budget and planning processes.

DHS has also improved its oversight and management of the Deepwater Program by reviewing the program under its own acquisition processes. In June 2008, we reported that DHS approval of Deepwater acquisition decisions at key points in the program was not required, as the department had deferred decisions on specific assets to the Coast Guard in 2003. We recommended that DHS rescind the delegation of Deepwater acquisition authority, and, in September 2008, the Under Secretary did so. As a result, DHS officials are now formally involved in reviewing and approving

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acquisition decisions for Deepwater assets at key points in the program's life cycle. In November 2008, DHS issued a new interim management directive that, if implemented as intended, should help ensure that the department's largest acquisitions, including Deepwater, are more effectively overseen and managed.<sup>8</sup>

Because the Coast Guard had previously exempted Deepwater from its *MSAM* process, assets were procured without following a disciplined program management approach. Recognizing the importance of ensuring that each acquisition project is managed through a sustainable and repeatable process and wanting to adhere to proven acquisition procedures, in July 2008 the Coast Guard set a goal of completing the *MSAM* acquisition management activities for all Deepwater assets by the end of March 2009. However, of the 13 Deepwater assets, 9 were behind schedule in terms of *MSAM* compliance as of May 2009, as not all required documents and processes had been completed. Not complying with the *MSAM* process puts the Coast Guard at risk of buying assets that do not fully meet its needs and that may experience cost growth and schedule slips.

#### Offshore Patrol Cutter and Unmanned Aerial System

Assets that are early in the development cycle, such as the Offshore Patrol Cutter (OPC) and the Unmanned Aerial System, are at present compliant with the *MSAM* process. For example, the *MSAM* directs the capabilities directorate to charter an integrated product team to develop operational requirements for Coast Guard assets. This approach is currently being applied to the OPC, which is in the "analyze/select" phase of the *MSAM* process. In accordance with *MSAM* guidelines, the OPC requirements team includes representatives from the Coast Guard's technical authorities, acquisition project managers, test and evaluation officials, and research and development officials. The goal of this process is to develop operational requirements that are specific, testable, prioritized, and defensible in order to adequately support the acquisition process and satisfy users' needs. The Coast Guard plans to continue to follow the *MSAM* process, under which the operational requirements document and other key acquisition documents will be approved by the Coast Guard and DHS prior to the OPC entering the "obtain" phase, when capabilities are developed and demonstrated. For the Unmanned Aerial System, currently

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<sup>8</sup> We recently reported on DHS's oversight of its major investments. See GAO, *Department of Homeland Security: Billions Invested in Major Programs Lack Appropriate Oversight*, [GAO-09-29](#) (Washington, D.C.: Nov. 18, 2008).

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## Maritime Patrol Aircraft and National Security Cutter

in the “need” phase of the acquisition process, the Coast Guard’s Office of Research, Development, Test and Evaluation is currently conducting preacquisition studies and tests to identify alternative approaches to fulfilling mission requirements for maritime surveillance and inform early cost estimates. Through these activities, the Coast Guard intends to mitigate risks by identifying approaches with high levels of technical and production maturity and leveraging development efforts underway by the Department of Defense and DHS.

For assets well into production, such as the MPA and the NSC, the Coast Guard has made some progress in the past year in retroactively developing acquisition documentation with the intent of providing the traceability from mission needs to operational performance that was previously lacking. For example, the Coast Guard approved an operational requirements document for the MPA in October 2008, to establish a formal performance baseline and identify attributes for testing. Through this process, the Coast Guard discovered that ICGS’s requirement for operational availability (the amount of time that an aircraft is available to perform missions) was excessive compared to the Coast Guard’s own standards. According to a senior Coast Guard official responsible for managing aviation assets, the ICGS requirement would have needlessly increased costs to maintain and operate the aircraft.

In addition to revisiting its requirements for the MPA, the Coast Guard is also revising its plans to test and procure the asset. In February 2009, the Coast Guard submitted an MPA test plan to DHS with the intent of obtaining approval for full-rate production based on the results of a November 2008 operational assessment conducted by the U.S. Navy’s Commander Operational Test and Evaluation Force (COMOPTEVFOR).<sup>9</sup> In April 2009, the DHS Director, Operational Test and Evaluation, approved the plan for testing leading up to initial operational test and evaluation, but required the Coast Guard to update and resubmit the plan before operational testing begins. DHS and Coast Guard policy require operational testing to be conducted before full-rate production is

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<sup>9</sup> An operational assessment focuses on significant trends noted in development efforts, programmatic voids, risk areas, adequacy of requirements, and the ability of the program to support operational testing. An operational assessment may be conducted at any time using technology demonstrators, prototypes, mock-ups, engineering development models, or simulations, but is not to substitute for initial operational testing and evaluation. COMOPTEVFOR’s operational assessment report for the MPA highlighted several areas of risk that the Coast Guard plans to address as the program evolves.

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approved. According to the senior official responsible for managing aviation assets, the Coast Guard now plans to obtain DHS approval to order further low-rate initial production aircraft at the next MPA acquisition decision event, scheduled for the end of fiscal year 2009. With 11 of 36 MPAs already delivered or on contract, the Coast Guard has already made a significant investment in this program before the testing that would demonstrate that what it is buying meets Coast Guard needs.

DHS also required the Coast Guard to obtain concurrence with the test plan from an operational test authority before proceeding with operational testing of the MPA. According to DHS and Coast Guard policy, operational testing should be conducted with the approval and under the oversight of an independent operational test authority to ensure that tests are clearly linked to requirements and mission needs. However, the *MSAM* appears to be inconsistent with DHS policy regarding who this test authority should be. The *DHS Acquisition Guidebook* states that an operational test authority should be independent of both the acquirer and user, which allows the test authority to present objective and unbiased conclusions about an asset's operational effectiveness and suitability. Further, a DHS directive on test and evaluation issued in May 2009 distinguishes between the "sponsor" (or user of the system), who is responsible for defining the system's operational requirements, and the operational test agent, who plans, conducts, and reports independent operational test and evaluation results. The *MSAM*, on the other hand, assigns responsibility for planning and conducting operational testing to the sponsor—the Coast Guard's capabilities directorate—which represents the end user. While the Coast Guard has a memorandum of agreement with COMOPTEVFOR to leverage the Navy's experience and expertise in conducting operational testing for the MPA, the Coast Guard's position is that its capabilities directorate can function as the operational test authority, as it is independent of the acquisition program office. The Director, DHS Test & Evaluation and Standards said that, particularly given the recent change to the department's test and evaluation directive, the *MSAM* does not appear to be consistent with DHS policy regarding the operational test authority.

The Coast Guard has also made a significant investment in the NSC program before completing operational testing to demonstrate that the capabilities it is buying meet Coast Guard needs. While some testing of the NSC has already taken place, the tests conducted to date do not substitute for the complete scope of operational testing that should be the basis for further investment. For example, COMOPTEVFOR completed an operational assessment of the NSC in 2007 to identify risks to the program's successful completion of operational testing. Before the first

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## Fast Response Cutter and C4ISR

NSC was delivered, it also underwent acceptance trials, conducted by the U.S. Navy Board of Inspection and Survey, to determine compliance with contract requirements and to test system capabilities. Since delivery of the first NSC, the Coast Guard has also conducted flight deck and combat system certifications with the assistance of the Navy. While these demonstrations and certifications provide evidence that the first NSC functions as intended, they do not fully demonstrate the suitability and effectiveness of the ship for Coast Guard operations. According to officials, a test plan to demonstrate these capabilities is expected to be approved in July 2009, and COMOPTEVFOR may begin operational testing in March 2010. However, by the time full operational testing is scheduled to be completed in 2011, the Coast Guard plans to have six of eight NSCs either built or under contract.

Based on its determination that the need for the capabilities to be provided by the Fast Response Cutter and C4ISR is pressing, the Coast Guard has contracted for these capabilities without having in place all acquisition documentation required by the *MSAM*. This situation puts the Coast Guard at risk for cost overruns and schedule slips if it turns out that what it is buying does not meet its requirements. For example, in September 2008, after conducting a full and open competition, the Coast Guard awarded an \$88.2 million contract to Bollinger Shipyards, Inc. for the design and construction of a lead Fast Response Cutter. Prior to the award, however, the Coast Guard did not have an approved operational requirements document or test plan for this asset as required by the *MSAM* process. Recognizing the risks inherent in this approach, the Coast Guard developed a basic requirements document and an acquisition strategy based on procuring a proven design. These documents were reviewed and approved by the Coast Guard's capabilities directorate, the engineering and logistics directorate, and chief of staff before the procurement began. The Coast Guard's next acquisition decision event is scheduled for the first quarter of fiscal year 2010 to obtain DHS approval for low-rate initial production. According to officials, the Coast Guard intends to submit an operational requirements document and test plan to DHS for this acquisition decision event. With plans to exercise contract options for hulls 2 through 8 in fiscal year 2010, the Coast Guard's aggressive schedule leaves little room for unforeseen problems. Program risks are compounded by the fact that the Coast Guard plans to have at least 12 cutters either delivered or under contract prior to the scheduled completion of operational testing in fiscal year 2012, before it has certainty that what it is buying meets Coast Guard needs.

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The Coast Guard has also continued its procurement of C4ISR capabilities without an approved operational requirements document as required by the *MSAM*. C4ISR encompasses the connections between surface, aircraft, and shore-based assets and is intended to provide operationally relevant information to Coast Guard field commanders. Design and development costs for the first increment of C4ISR have increased significantly, from \$55.5 million to \$141.3 million. According to Coast Guard officials, this increase was due in part to the structure of the ICGS contract, under which the Coast Guard lacked visibility into the contractor's software development processes and requirements. In addition, the ICGS C4ISR solution developed under the first increment contained Lockheed Martin-proprietary software, making the Coast Guard reliant on the contractor for maintenance and support.

In February 2009, the Coast Guard issued a task order to ICGS, with a total potential value of \$77.7 million, for a second increment of C4ISR design and development.<sup>10</sup> It was not until May 2009, however, that the capabilities directorate reviewed and concurred with the capabilities identified in the acquisition plan. Coast Guard officials stated that the Coast Guard's technical authority for C4ISR reviewed the acquisition plan and statement of work to ensure conformance with Coast Guard technical standards, but the officials said there is no operational requirements document for this increment. The lack of operational requirements may put the program at continued risk of cost increases if the Coast Guard determines that what it is buying does not meet its needs. Through the award of the second C4ISR increment, the Coast Guard has acquired some of the data rights to the proprietary software developed under the first increment. The Coast Guard's goal is to gain greater visibility into the software in order to compete future increments. According to officials, future decisions about the C4ISR acquisition rest on the Coast Guard's ability to affordably maintain and support the C4ISR software and ensure interoperability between Deepwater assets and the Coast Guard as a whole; however, the Coast Guard has not yet determined how it will do so. According to officials, acquisition of the third C4ISR increment will adhere to the *MSAM* process, and documents critical to determining and testing requirements and capabilities will be completed and approved by DHS before the Coast Guard proceeds with a contract award in about 2 years.

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<sup>10</sup> The task order includes options that have not yet been exercised.

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## Coast Guard Developing Better- Informed Cost and Schedule Estimates for Deepwater Assets, but Reporting May Not Keep Congress Fully Informed

Due in part to the Coast Guard's increased insight into what it is buying, the anticipated cost, schedules, and capabilities of many of the Deepwater assets have changed since the establishment of the \$24.2 billion baseline in 2007. Coast Guard officials have stated that this baseline reflected not a traditional cost estimate, but rather the anticipated contract costs as determined by ICGS. As the Coast Guard has developed its own cost baselines, it has become apparent that some of the assets will likely cost more than anticipated. Information to date shows that the total cost of the program will likely grow by at least \$2.7 billion. This represents growth of approximately 39 percent for those assets with revised cost estimates. Furthermore, assets may be ready for operational use later than anticipated in the 2007 baseline and, at least initially, lack some of the capabilities envisioned. As the Coast Guard develops more baselines, further cost and schedule growth is likely to become apparent. While the Coast Guard plans to update its annual budget requests with this new information, the current structure of its budget submission to Congress does not include details at the asset level, such as estimates of total costs and total numbers to be procured.

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## Better-Informed Baselines Suggest Deepwater Costs Could Exceed \$24.2 Billion

The \$24.2 billion baseline for the Deepwater Program established cost, schedule, and operational requirements for the Deepwater system as a whole; these were then allocated to the major assets. Coast Guard officials have stated that this baseline reflected not a traditional cost estimate but ICGS's anticipated contract costs. Furthermore, the Coast Guard lacked insight into how ICGS arrived at some of the costs for Deepwater assets. As the Coast Guard has assumed greater responsibility for management of the Deepwater Program, it has begun to improve its understanding of costs by establishing new baselines for individual assets based on its own cost estimates. These baselines begin at the asset level and are developed by Coast Guard project managers, validated by a separate office conducting independent cost estimates within the acquisition branch and, in most cases, are reviewed and approved by DHS. The estimates use common cost-estimating procedures and assumptions and account for costs not previously captured. As of June 2009, the Coast Guard had prepared 10 revised asset baselines. Two were approved by the Coast Guard (for the sustainment projects for the medium endurance cutter and the patrol boats) and 8 had been submitted to DHS, which had approved 5 of them. These new baselines are formulated using various sources of information, depending on the acquisition phase of the asset. For example, the baseline for the NSC was updated using the actual costs of material, labor, and other considerations already in effect at the shipyards. The baselines for other assets, like the MPA, were updated using independent cost

estimates. As the Coast Guard approaches major milestones on Deepwater assets, such as the decision to enter low-rate initial production or to begin system development, officials have stated that the cost estimates for all assets will be reassessed and revalidated.

In developing its own asset baselines, the Coast Guard has found that some of the assets will likely cost more than anticipated. As of June 2009, with 7 of the 10 baselines approved, the total cost of the program will likely exceed \$24.2 billion, with potential cost growth of approximately \$2.7 billion. For the assets with revised cost estimates, this represents cost growth of approximately 39 percent. As baselines for the additional assets are approved, further cost growth will likely become apparent. Table 3 provides the revised estimates of asset costs available as of June 2009. It does not reflect the roughly \$3.6 billion in other Deepwater costs, such as program management, that the Coast Guard states do not require a new baseline.

**Table 3: Changes in Asset Costs from 2007 Baseline as of June 2009 (Dollars in millions)**

<b>Asset</b>	<b>2007 Baseline</b>	<b>Current estimate</b>	<b>Change</b>
National Security Cutter	\$3,450	\$4,749	\$1,299
Offshore Patrol Cutter	8,098	Baseline in development, due November 2009	
Fast Response Cutter <sup>a</sup>	3,206	Baseline submitted to DHS February 2009	
Medium Endurance Cutter Sustainment	317	321 <sup>b</sup>	4
Patrol Boat Sustainment (110' patrol boats)	117	194 <sup>b</sup>	77
Maritime Patrol Aircraft	1,706	2,400	694
HC-130J Long-Range Surveillance Aircraft	11	176	165
HC-130H Long-Range Surveillance Aircraft	610	745	135
HH-65 Multimission Cutter Helicopter	741	1,041 <sup>c</sup>	300
HH-60 Medium Range Recovery Helicopter	451	Baseline submitted to DHS December 2008	
Cutter Small Boats	110	Baseline in development, due June 2009	
Unmanned Aerial System	503	Baseline in development	
C4ISR	1,353	Baseline submitted to DHS January 2009	

Source: GAO analysis of Coast Guard data.

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Note: If the approved baselines present both threshold and objective costs, threshold costs (which are the maximum allowable costs) are used.

<sup>a</sup>In the 2007 baseline, costs for two variants of the Fast Response Cutter were presented. The new baseline will present the total costs for the recently awarded design.

<sup>b</sup>The baselines for these assets were approved within the Coast Guard.

<sup>c</sup>Reflects only the cost of upgrades planned under the 2007 Deepwater baseline and does not include certain other capabilities now included in the revised baseline. A detailed cost estimate for portions of the planned upgrades has not been completed, so additional revisions may occur in the future.

The Coast Guard's new baselines provide not only a better understanding of the costs of Deepwater assets, but also insight into the drivers of any cost growth. For example, the new NSC baseline attributes a \$1.3 billion rise in cost to a range of factors, from the additional costs to correct fatigue issues on the first three cutters—estimated by the Coast Guard to add an additional \$86 million—to changes in economic factors such as labor and commodity prices that add an additional \$434 million to the cost of the first four ships. The \$517 million rise in cost for the MPA is attributed primarily to items that were not previously accounted for, including \$36 million for a training simulator, \$30.6 million in facility improvements, and \$124 million for sufficient spare parts. An additional \$115.9 million is attributable to cost growth for the aircraft and engineering changes.

The Coast Guard has structured some of the new baselines to indicate how cost growth could be controlled by making trade-offs in asset quantities and/or capabilities. For example, the new MPA baseline includes cost increments that show the acquisition may be able to remain within the \$1.7 billion estimate established in the 2007 baseline if 8 fewer aircraft than the planned 36 are acquired. Coast Guard officials have stated that other baselines currently under review by DHS present similar cost increments. This information, if combined with data from the fleet mix study to show the effect of quantity or capability reductions on the system-of-systems as a whole, offers an opportunity to the Coast Guard for serious discussions of cost and capability trade-offs. Given the approximately 39 percent cost growth for the Deepwater assets that have revised cost estimates, the trade-off assessment is critical—particularly with regard to the OPC, which currently represents a substantial portion of the planned Deepwater investment.

The Coast Guard's reevaluation of baselines has also improved insight into the schedules for when assets will first be available for operations and when final assets will be delivered. For example, the initial operating capability of the first NSC has been delayed by a year as compared to the schedule in the 2007 baseline, and the MPA has been delayed by 21

months. Table 4 provides more information on initial operational capability and final asset delivery schedules for Deepwater assets that have had revised baselines approved. Other assets have baselines either with DHS for approval or are in development.

**Table 4: Changes in Initial Operational Capability and Final Asset Delivery from 2007 Baseline for Selected Deepwater Assets**

Asset	Initial operational capability			Final asset delivery		
	2007 Baseline	Current estimate	Change	2007 Baseline	Current estimate	Change
National Security Cutter	FY2008	FY2009	12 months	FY2014	FY2016	24 months
Medium Endurance Cutter Sustainment	FY2006	FY2006	0 months	FY2016	FY2017	17 months
Patrol Boat Sustainment (110' patrol boats)	FY2009	FY2007	(18 months)	FY2013	FY2014	17 months
Maritime Patrol Aircraft	FY2008	FY2009	21 months	FY2016	FY2020	57 months
HC-130J Long-Range Surveillance Aircraft	FY2008	FY2009	3 months	FY2009	FY2011	21 months
HC-130H Long-Range Surveillance Aircraft	FY2013	To be determined		FY2017	To be determined	
HH-65 Multimission Cutter Helicopter	FY2009	To be determined		FY2013	To be determined	

Source: GAO analysis of Coast Guard data.

Note: If the approved baselines present both threshold and objective dates, threshold dates (which are the latest allowable dates) are used.

Since many Deepwater assets are intended to replace older Coast Guard assets, delays in their introduction and final deliveries could have an effect beyond the Deepwater Program. For example, the NSC—together with the OPC—is intended to replace older High Endurance and Medium Endurance Cutters, some of which have been in service for over 40 years. According to Coast Guard officials, the longer these older cutters remain in service—due to a delay in the introduction of the NSC or the OPC to the fleet or delays in delivering all of the assets—the more funding will be required for maintenance of assets that are being replaced. According to a senior official in the Coast Guard’s acquisition directorate, additional, unplanned funding will be required for a sustainment project to keep the High Endurance Cutters in service longer than anticipated. An acquisition strategy to achieve this project is currently in development.

The Coast Guard’s reevaluation of baselines has also changed its understanding of the capabilities of Deepwater assets. For example, Coast Guard officials stated that the restructuring of the unmanned aircraft and

small boat projects has delayed the deployment of these assets with the first NSC and reduces the ship’s anticipated capabilities in the near term. We plan to report this summer on the operational effect of these delays on the NSC.

Current Budget Reporting Lacks Detail at Asset Level and Limits Congressional Insight

The Coast Guard’s budget submission, as currently structured, limits Congress’s understanding of details at the asset level in so far as it does not include key information such as assets’ total acquisition costs or, for the majority of assets, the total quantities planned. For example, while the justification of the NSC request includes a detailed description of expected capabilities and how these capabilities link to the Coast Guard’s missions and activities funded by past appropriations, it does not include estimates of total program cost, future award or delivery dates of remaining assets, or even the total number of assets to be procured.

Our past work has emphasized that one key to a successful capital acquisition, such as the multibillion-dollar ships and aircraft the Coast Guard is procuring, is budget submissions that clearly communicate needs.<sup>11</sup> An important part of this communication is to provide decision makers with information about cost estimates, risks, and the scope of a planned project before substantial resources are committed. Good budgeting also requires that the full costs of a project be considered upfront when decisions are made. Other federal agencies that acquire systems similar to those of the Coast Guard, such as the Department of Defense, capture these elements in justifications of their budget requests. To illustrate, table 5 provides a comparison of the information found in the NSC budget justification with that the Navy is required to use in the Department of Defense regulations for its shipbuilding programs.

Table 5: Comparison of Budget Justification Elements						
	Prior-year allocation	Current request	5-year outlook	Future contract awards	Total acquisition cost	Total asset quantities
Coast Guard (NSC)	X	X	X			
Navy	X	X	X	X	X	X

Source: GAO analysis.

<sup>11</sup> GAO, *Executive Guide: Leading Practices in Capital Decision-Making*, [GAO/AIMD-99-32](#) (Washington, D.C.: December 1998).

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While the Coast Guard's asset-level Quarterly Acquisition Reports to Congress and the annual Deepwater Program Expenditure Report include some information on total costs and quantities, these documents are provided only to the appropriations committees, and they contain selected information that is restricted due to acquisition sensitive material. The budget justification prepared by the Coast Guard is a tool that Congress uses in its budget and appropriations deliberations. Presentation of information on the full costs and quantities of Deepwater assets in the Coast Guard's budget submission can provide Congress greater insights in fulfilling its roles of providing funding and conducting oversight.

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## Coast Guard Having Difficulty Staffing Government Acquisition Positions but Working to Improve Processes

The Coast Guard sought a systems integrator at the outset of the Deepwater Program in part because its workforce lacked the experience and depth to manage the acquisition internally. The Coast Guard acknowledges that it still faces challenges in hiring and retaining qualified acquisition personnel and that this situation poses a risk to the successful execution of its acquisition programs. According to human capital officials in the acquisition directorate, as of April 2009 the acquisition branch had funding for 855 military and civilian personnel and had filled 717 of these positions—leaving 16 percent unfilled. The Coast Guard has identified some of these unfilled positions as core to the acquisition workforce, such as contracting officers and specialists, program management support staff, and engineering and technical specialists. Even as it attempts to fill its current vacancies, the Coast Guard plans to increase the size of its acquisition workforce significantly by the end of fiscal year 2011. For example, the Coast Guard's fiscal year 2010 budget request includes funding for 100 new acquisition workforce positions, and the Coast Guard anticipates requesting funding for additional positions in future budget requests.

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## Coast Guard Has Expanded Collaboration with Independent Third Parties and Increased Use of Support Contractors to Assist with Acquisitions

To supplement and enhance its internal expertise, the Coast Guard has increased its use of third-party, independent experts from outside both the Coast Guard and existing Deepwater contractors. For example, a number of organizations within the Navy have provided views and expertise on a wide range of issues, including testing and safety. In addition, the Coast Guard plans to use the American Bureau of Shipping, an organization that establishes and applies standards for the design and construction of ship and other marine equipment, as an advisor and independent reviewer on the design and construction of the Fast Response Cutter. The Coast Guard has also begun a relationship with a university-affiliated research center to supplement its expertise as it executes its fleet-mix analysis.

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In addition to third-party experts, the Coast Guard has been increasing its use of support contractors. As of fiscal year 2009, approximately 170 contractor employees supported the acquisition directorate, a number that has steadily increased in recent years. These contractors are performing a variety of services—some of which support functions the Coast Guard has identified as core to the government acquisition workforce—including project management support, engineering, contract administration, and business analysis and management. While support contractors can provide a variety of essential services, their use must be carefully overseen to ensure that they do not perform inherently governmental roles.<sup>12</sup> The Coast Guard, acknowledging this risk, is monitoring its use of support contractors to properly identify the functions they perform and has developed a policy to define what is and what is not inherently governmental.

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### Coast Guard Has Made Progress in Identifying and Mitigating Acquisition Workforce Challenges

While the Coast Guard may be hard-pressed to fill the government acquisition positions it has identified both now and in the future, it has made progress in identifying the broader challenges it faces and is working to mitigate them. The Coast Guard has updated two documents key to this effort, the *Blueprint for Acquisition Reform*, now in its third iteration, and the *Acquisition Human Capital Strategic Plan*, which is in its second iteration. Each document identifies challenges the Coast Guard faces in developing and managing its acquisition workforce and outlines initiatives and policies to meet these challenges. For example, the *Acquisition Human Capital Strategic Plan* sets forth three overall challenges and outlines over a dozen strategies for addressing them in building and maintaining an acquisition workforce. The discussion of strategies includes status indicators and milestones for monitoring progress, as well as supporting actions such as the formation of partnerships with the Defense Acquisition University and continually monitoring turnover in critical occupations. The *Blueprint for Acquisition Reform* supports

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<sup>12</sup> Federal acquisition policy requires enhanced oversight of contractors providing professional and management support services that can affect government decision making, support or influence policy development, or affect program management. Our past work at DHS found that the level of contractor oversight provided by DHS did not always ensure accountability for decisions or the ability to judge whether the contractor was performing as required. Failure to ensure appropriate oversight increases the potential for a loss of management control and ability to ensure that intended outcomes are achieved. GAO, *Department of Homeland Security: Improved Assessment and Oversight Needed to Manage Risk of Contracting for Selected Services*, [GAO-07-990](#) (Washington, D.C.: Sept. 17, 2007).

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many of these initiatives and provides deadlines for their completion. In fact, the Coast Guard has already completed a number of initiatives including

- achieving and maintaining Level III program manager certifications,
- adopting a model to assess future workforce needs,
- incorporating requests for additional staff into the budget cycle,
- initiating tracking of workforce trends and metrics,
- expanding use of merit-based rewards and recognitions, and
- initiating training on interactions and relationships with contractors.

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## Conclusions

In assuming the role of systems integrator, the Coast Guard has made a major change in its management of the Deepwater Program, one that has increased its insight into the capabilities needed to fulfill Coast Guard missions, the costs and capabilities of what it is currently procuring, and what resources are needed to complete the acquisition. The continued application and improvement of the disciplined management processes inherent in the *MSAM* are also beneficial in helping to ensure that Deepwater assets are designed and delivered to meet mission needs. While these changes, as well as the additional oversight gained by DHS's participation in acquisition decisions, do not eliminate the risks associated with this multibillion-dollar acquisition, they do help ensure that program risks are more fully considered. However, the Coast Guard has not applied the disciplined acquisition process to the FRC and the second increment of C4ISR, recent contract actions that will involve additional investments of taxpayer dollars over time. Further, as operational testing proceeds for Deepwater assets, the *MSAM* appears to be inconsistent with DHS policy and the recent directive on test and evaluation, which require operational test authorities to be independent of the system's user. Finally, in light of the sheer size and scope of the Deepwater Program and Congress's role in providing funds, the Coast Guard's budget submissions do not provide a complete picture of the planned costs of Deepwater assets that would help inform the decision-making process.

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## Recommendations for Executive Action

We recommend that the Commandant of the Coast Guard take the following three actions:

- Do not exercise further options under the Fast Response Cutter contract and under the task order for the second increment of C4ISR until these projects are brought into full compliance with the *MSAM* and DHS acquisition directives.

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- Consult with the DHS Office of Test & Evaluation and Standards to determine whether the *MSAM* conflicts with DHS's directive regarding the entity named as the independent operational test authority and, if so, take steps to reconcile the inconsistency.
  - As the Coast Guard prepares future budget submissions for Deepwater, include the total acquisition costs for the assets and total quantities planned.

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## Agency Comments and Our Evaluation

In written comments on a draft of this report, the Coast Guard concurred with our findings. The agency also stated that it concurred with our recommendation to not exercise further contract options on the Fast Response Cutter and the second increment of C4ISR until these projects are brought into full compliance with the *MSAM* and DHS acquisition directives, as well as our recommendation to consult with DHS on policies regarding the independent operational test authority. DHS intends to take our final recommendation, to provide total acquisition costs and quantities in future budget submissions, under advisement. DHS noted that the proposed changes could result in the Coast Guard failing to comply with DHS budget submission guidelines and that Congress currently receives long-term acquisition project information through the Quarterly Acquisition Report to Congress. While we agree that this report includes some information on total costs and quantities, as we state in the report, it is provided only to the appropriations committees and contains other information that is restricted and limits its distribution, and therefore its utility, to decision makers. Presentation of information on the full costs and quantities of Deepwater assets in the Coast Guard's budget submission can provide the information to a wider audience and better assist Congress in providing funding and conducting oversight.

The comments from DHS are included in their entirety in appendix II. Technical comments were also provided and incorporated into the report as appropriate.

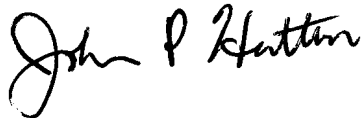
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We are sending copies of this report to interested congressional committees, the Secretary of Homeland Security, and the Commandant of the Coast Guard. This report will also be available at no charge on GAO's Web site at <http://www.gao.gov>.

If you or your staff have any questions about this report or need additional information, please contact me at (202) 512-4841 or [huttonj@gao.gov](mailto:huttonj@gao.gov).

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Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Staff acknowledgements are provided in appendix III.

A handwritten signature in black ink, reading "John P. Hutton". The signature is fluid and cursive, with the first name "John" being more prominent than the last name "Hutton".

John P. Hutton  
Director  
Acquisition and Sourcing Management

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# Appendix I: Scope and Methodology

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Overall, in conducting this review, we relied in part on the information and analysis in our April 2009 testimony, *Update on Deepwater Program Management, Cost, and Acquisition Workforce*<sup>1</sup> and our June 2008 report, *Change in Course Improves Deepwater Management and Oversight, but Outcome Still Uncertain*.<sup>2</sup> Additional scope and methodology information on each objective of this report follows.

To assess the Coast Guard's efforts to manage the Deepwater Program at the overall system-of-systems level, we reviewed the Coast Guard's July 2008 *Blueprint for Acquisition Reform*, work group charters, and plans and actions the Coast Guard has taken to assume the role of systems integrator. To understand how the Coast Guard defined and assigned systems integrator roles and responsibilities, we reviewed the Coast Guard's *Major Systems Acquisition Manual (MSAM)* and technical authority instructions. We also interviewed senior acquisition directorate officials, representatives of the Coast Guard's capabilities directorate, and representatives of Coast Guard's technical authorities. To analyze the scope and volume of work currently under contract with Integrated Coast Guard Systems (ICGS) and the Coast Guard's plans to end its contractual relationship with ICGS, we reviewed task orders, contract statements of work, and acquisition plans and interviewed senior acquisition directorate officials and contracting officials. To assess the Coast Guard's implementation of a disciplined, project management process for Deepwater acquisitions, we reviewed the most recent update to Coast Guard's *MSAM* and the Department of Homeland Security's (DHS) November 2008 Interim Acquisition Directive 102-01 as well as how individual assets were complying with both sets of guidance. We compared these policies with best practices reflected in previous GAO work on major acquisitions.<sup>3</sup> We also interviewed acquisition directorate officials and program and project managers to discuss ongoing efforts to transition the acquisition of Deepwater assets to the *MSAM* process and spoke with DHS officials about the department's major acquisition review process and reporting requirements. We also interviewed Coast Guard officials and analyzed documentation for the fleet-mix analysis currently

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<sup>1</sup> GAO, *Update on Deepwater Program Management, Cost, and Acquisition Workforce*, [GAO-09-620T](#) (Washington, D.C.: Apr. 22, 2009).

<sup>2</sup> GAO, *Change in Course Improves Deepwater Management and Oversight, but Outcome Still Uncertain*, [GAO-08-745](#) (Washington, D.C.: June 24, 2008).

<sup>3</sup> GAO, *Defense Acquisitions: A Knowledge-Based Funding Approach Could Improve Major Weapon System Program Outcomes*, [GAO-08-619](#) (Washington, D.C.: July 2008).

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being conducted by the capabilities directorate. We conducted case studies of selected assets, representing some that are in production as well as some with recent contract awards. This analysis included reviews of acquisition program baselines, operational requirements documents, test plans, and other key acquisition documentation and interviews with program and project managers and independent test authority officials. In addition, we met with contractor and Coast Guard officials at Lockheed Martin's facilities in Moorestown, New Jersey and ICGS's offices in Arlington, Virginia to discuss the transition of systems integrator functions and current work on C4ISR capabilities. We also met with Coast Guard officials at the Aviation Logistics Center in Elizabeth City, North Carolina to discuss their role in upgrading and maintaining Deepwater assets, and the U.S. Navy's Commander Operational Test and Evaluation Force in Norfolk, Virginia to discuss their role in conducting operational testing. Finally we met with Coast Guard officials and toured facilities and ships, including the National Security Cutter Bertholf in Alameda, California.

To assess how cost, schedules, and capabilities have changed from the 2007 Deepwater Acquisition Program Baseline approved by DHS, we reviewed that baseline and compared it to the revised baselines for individual assets that have been approved to date. We also interviewed senior acquisition directorate officials and program and project managers to discuss how the Coast Guard is developing new acquisition program baselines for individual assets and how the process used differs from that in the 2007 baseline, such as the basis for cost estimates. We reviewed the Coast Guard's guidance and policy on cost estimating in the *MSAM* and compared it to GAO best practices, including our *Cost Assessment Guide: Best Practices for Estimating and Managing Program Costs*.<sup>4</sup> We also reviewed operational requirements documents and project reports for selected assets in various stages of the development and production processes to understand the major drivers of cost growth, schedule delays, and capability changes. We interviewed acquisition directorate officials and program and project managers to discuss options for controlling cost growth by making trade-offs in asset quantities and/or capabilities, as well as some of the potential implications of unplanned schedule delays. To assess how well costs are communicated to Congress, we reviewed the Office of Management and Budget's guidance on budget justifications, the Coast Guard's 2009 and 2010 budget justifications, the Coast Guard's 2008

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<sup>4</sup>GAO, *Cost Assessment Guide: Best Practices for Estimating and Managing Program Costs*, [GAO-07-1134SP](#) (Washington, D.C.: July 2007).

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Deepwater Expenditure Plan, and the Coast Guard's Quarterly Acquisition Reports to Congress. We compared the Coast Guard's budget submissions to those prepared by the Navy.

To assess the Coast Guard's efforts to manage and build its acquisition workforce, we reviewed Coast Guard organization charts for aviation, surface, and C4ISR components showing government, contractor, and vacant positions. We supplemented this analysis with interviews of acquisition directorate officials, including contracting and Office of Acquisition Workforce Management officials and program and project managers to discuss current vacancy rates—especially for key acquisition positions such as contracting officials and systems engineers—and the Coast Guard's plans to increase the size of the acquisition workforce. We also reviewed documentation and interviewed senior acquisition directorate officials about the Coast Guard's use of third parties and independent experts outside of the Coast Guard such as the U.S. Navy and the American Bureau of Shipping, as well as increased use of support contractors and oversight to prevent contractors from performing inherently governmental functions. We reviewed documentation such as the July 2008 *Blueprint for Acquisition Reform* and the updated *Acquisition Human Capital Strategic Plan* and discussed workforce initiatives, challenges, and obstacles to building an acquisition workforce, including recruitment and difficulty in filling key positions.

We conducted this performance audit from September 2008 to July 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

# Appendix II: Comments from the Department of Homeland Security

U.S. Department of Homeland Security  
Washington, DC 20528



**Homeland  
Security**

July 9 2009

Mr. John P. Hutton  
Director  
Acquisition and Sourcing Management  
United States Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Dear Mr. Hutton:

Thank you for the opportunity to review and comment on the Government Accountability Office's (GAO's) Draft Report GAO-09-682 entitled, COAST GUARD: As Deepwater Systems Integrator, Coast Guard Is Reassessing Costs and Capabilities but Lags in Applying Its Disciplined Acquisition Approach.

The United States Coast Guard remains grateful for the work GAO has done to bring attention to issues within the Deepwater acquisition program and concurs with the findings of this report. The commitment the GAO has towards making the Deepwater program successful is appreciated and the Coast Guard values the opinion of the GAO. The Coast Guard benefits from this oversight and will use it to ensure improvement to our acquisition program in the future. Thank you for considering the Coast Guard's comments on these very important issues. While the Coast Guard concurs with recommendations 1 and 2, we recommend that DHS take recommendation 3 under advisement.

*"We recommend that the Commandant of the Coast Guard take the following three actions:*

**Recommendation 1:** *Do not exercise further options under the Fast Response Cutter contract and under the task order for the second increment of C4ISR until these projects are brought into full compliance with the MSAM and DHS acquisition directives.*

**Response:** Concur. The USCG agrees with Recommendation 1 and is in the process of completing appropriate Major Systems Acquisition Manual (MSAM) documentation before each project's next Acquisition Decision Event that would authorize contract options.

**Recommendation 2:** *Consult with the DHS office of Test & Evaluation and Standards to determine whether the MSAM conflicts with DHS's directive regarding the entity named as the independent operational test authority and, if so, take steps to reconcile the inconsistency.*

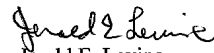
**Response:** Concur. The USCG agrees with Recommendation 2 and is in the process of updating the MSAM to comply with DHS's new Interim Policy on Testing and Evaluation standards. The last revision to the MSAM was on April 16, 2009, and this new policy was published by DHS on May 29, 2009. The Coast Guard will incorporate these standards as part of the next revision to the MSAM to align with applicable DHS directives.

**Recommendation 3:** *As the Coast Guard prepares future budget submissions for Deepwater, include the total acquisition costs for the assets and total quantities planned.*

**Response:** DHS intends to take this Recommendation under advisement. The Coast Guard is currently in compliance with DHS Policy that governs budget submission format. These proposed changes to the Coast Guard's budget submission format could result with not complying with DHS submission guidelines. Congress currently receives long term acquisition project information such as total acquisition costs and total quantities planned through the Quarterly Acquisition Report to Congress. This information includes Future Contract Awards, Total Acquisition Cost, Total Asset Quantities, Lifecycle Cost Estimates, Project Risks, and Project Scope.

Thank you again for the opportunity to comment on this Draft Report and we look forward to working with you on future Homeland Security issues.

Sincerely,



Gerald E. Levine  
Director  
Departmental GAO/OIG Liaison Office

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# Appendix III: GAO Contact and Acknowledgments

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For further information about this report, please contact John P. Hutton, Director, Acquisition and Sourcing Management, at (202) 512-4841 or [huttonj@gao.gov](mailto:huttonj@gao.gov). Other individuals making key contributions to this report include Michele Mackin, Assistant Director; Greg Campbell; Carolyn Cavanaugh; J. Kristopher Keener; Angie Nichols-Friedman; and Sylvia Schatz.

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# Related GAO Products

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*Coast Guard: Update on Deepwater Program Management, Cost, and Acquisition Workforce.* [GAO-09-620T](#). Washington, D.C.: April 22, 2009.

*Coast Guard: Change in Course Improves Deepwater Management and Oversight, but Outcome Still Uncertain.* [GAO-08-745](#). Washington, D.C.: June 24, 2008.

*Coast Guard: Observations on Changes to Management and Oversight of the Deepwater Program.* [GAO-09-462T](#). Washington, D.C.: March 24, 2009.

*Status of Selected Assets of the Coast Guard's Deepwater Program.* [GAO-08-270R](#). Washington, D.C.: March 11, 2008.

*Coast Guard: Deepwater Program Management Initiatives and Key Homeland Security Missions.* [GAO-08-531T](#). Washington, D.C.: March 5, 2008.

*Coast Guard: Status of Efforts to Improve Deepwater Program Management and Address Operational Challenges.* [GAO-07-575T](#). Washington, D.C.: March 8, 2007.

*Coast Guard: Status of Deepwater Fast Response Cutter Design Efforts.* [GAO-06-764](#). Washington, D.C.: June 23, 2006.

*Coast Guard: Changes to Deepwater Plan Appear Sound, and Program Management Has Improved, but Continued Monitoring Is Warranted.* [GAO-06-546](#). Washington, D.C.: April 28, 2006.

*Coast Guard: Progress Being Made on Addressing Deepwater Legacy Asset Condition Issues and Program Management, but Acquisition Challenges Remain.* [GAO-05-757](#). Washington, D.C.: July 22, 2005.

*Coast Guard: Preliminary Observations on the Condition of Deepwater Legacy Assets and Acquisition Management Challenges.* [GAO-05-651T](#). Washington, D.C.: June 21, 2005.

*Coast Guard: Deepwater Program Acquisition Schedule Update Needed.* [GAO-04-695](#). Washington, D.C.: June 14, 2004.

*Contract Management: Coast Guard's Deepwater Program Needs Increased Attention to Management and Contractor Oversight.* [GAO-04-380](#). Washington, D.C.: March 9, 2004.

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**Related GAO Products**

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*Coast Guard: Actions Needed to Mitigate Deepwater Project Risks.*  
[GAO-01-659T](#). Washington, D.C.: May 3, 2001.

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